

Tier II Hazardous Chemical Inventory

TIER II HAZARDOUS CHEMICAL INVENTORY

Michael Young

Michigan
SARA Title III Program - DEQ

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WHAT IS THE TIER II REPORT?

- A report required under SARA Title III Section 312 of Hazardous substances at a facility that are above the threshold,
- Submitted annually to state and local officials, and
- Made available to the public upon request.

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WHO MUST SUBMIT A TIER II REPORT?

- The owner or operator of a facility
- If required under OSHA to prepare or have available SDSs for hazardous substances present at the facility,
- If exemptions do not apply, and
- If the threshold amount or more of a hazardous substance was present at the facility at any time during the past calendar year.

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Tier II Hazardous Chemical Inventory

OWNER OR OPERATOR

Owner OR Operator?



The report is the responsibility of whomever must maintain the SDS for the hazardous material.

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TIER II

HAZARDOUS SUBSTANCES

- Hazardous Substances = all substances for which OSHA requires an SDS.
- There is NO LIST of these “OSHA” hazardous substances.

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ALL SUBSTANCES COVERED BY SARA TITLE III

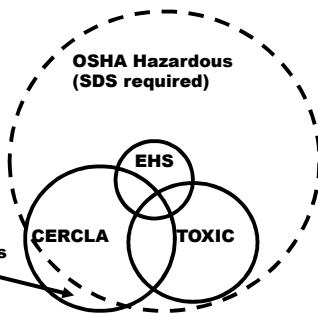
OSHA: Tier II

EHS: Emergency Plan & Release Report

CERCLA: Release Report

TOXIC: TRI

RCRA hazardous waste



CERCLA & EHS & TOXIC are in the List of Lists

Tier II Hazardous Chemical Inventory

HAZARDOUS SUBSTANCES

Remember...

Thresholds for reporting:

- OSHA hazardous substances = 10,000 pounds
- EHS = 500 pounds or TPQ (whichever is lower)
- Requests by LEPC/Fire Dept = zero pounds

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TIER II

HAZARDOUS SUBSTANCES



1. OSHA defines hazardous substance as any substance that is a physical hazard or a health hazard. (Pg. 3-4 for description)
2. OSHA requires that an SDS be maintained for each hazardous substance.

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TIER II

HAZARDOUS SUBSTANCES

3. Water can have an SDS, but it is not required by OSHA.



GHS Hazard Phrases:

Based on evaluation of currently available data this substance or mixture is not classifiable according to GHS.

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Tier II Hazardous Chemical Inventory

TIER II

HAZARDOUS SUBSTANCES

4. OSHA does not require an SDS for Hazardous Waste.

It is advise that you report it!!!




TIER TWO

HAZARDOUS SUBSTANCES

5. Petroleum distillates are hazardous.

Regardless of what is stated on the SDS, if a product contains petroleum distillates, it must be reported.

Hazard = Immediate/Acute



Tier II

EXEMPTIONS

Some hazardous substances do not have to be reported on the Tier II report.

Pg. 3-7:
"What Chemicals Are Excluded?"

Tier II Hazardous Chemical Inventory

Tier II

EXEMPTIONS

Any substance present as a solid in any manufactured item to the extent exposure to the substance does not occur under normal conditions of use.

- Only fumes or dust emitted when the item is being modified are counted toward the Tier II reporting threshold.

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Tier II

EXEMPTIONS

Any substance to the extent it is used for personal, family, or household purposes, or is present in the same form and concentration as a product packaged for distribution and use by the general public.

Example: car batteries, bags of deicing salt, pesticides sold in grocery stores

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Tier II

EXEMPTIONS

Section 312 (Tier II) Exemptions do NOT apply to:

- Section 302 : Emergency Planning Requirements
- Section 304 : Hazardous Substance Release Notifications


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Tier II Hazardous Chemical Inventory

Tier II

EXEMPTIONS



EPA estimates that 200 car batteries contain 1000 lbs of sulfuric acid.
(Sulfuric Acid is an EHS with a TPQ of 1000 lbs)

If you have 200 car batteries on your shelves, your facility is not subject to section 312, but it is subject to section 302 Emergency Planning.


16 DEQ

GALLONS TO POUNDS

FORMULA FOR CONVERSION

Amounts are always in *pounds*.
Gallons must be converted to pounds.
Formula on Pg. 3-6

Specific Gravity (Relative Density) from SDS
X
Weight of Water (8.34 lbs per gal)
=
Pounds per gallon of substance




17 DEQ

GALLONS TO POUNDS

TEST YOUR UNDERSTANDING

4000 gallons of gasoline



From SDS (Pg. 6-18):
Specific gravity = 0.72 **0.75**

18 DEQ

Tier II Hazardous Chemical Inventory

GALLONS TO POUNDS

CONVERSION ANSWER

Calculate the weight of the gasoline

$$\begin{array}{rcl} 0.75 \times 8.34 \text{ lb/gal} & = & \mathbf{6.3 \text{ lb/gal}} \\ \times & & \\ 4000 \text{ gal} & = & \mathbf{25,200 \text{ lbs}} \end{array}$$

Note: Combine amounts of all grades of gasoline for threshold determination and reporting.

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TIER II

THRESHOLD

- "OSHA" hazardous substances = 10,000 *pounds*

Largest amount on site at any one time during the previous calendar year in storage and in process.

How much might be involved in a chemical release incident (e.g. a fire)?

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TIER II

THRESHOLD: Apply to product or hazardous ingredient?

- Hydrochloric acid (HCl): 7647-01-0

Do the hazards change with dilution?

- Pure HCl (hydrogen chloride gas) = EHS
- $\geq 37\%$ concentration = CAA 112(r)

Report the product with mixture components & concentrations.

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Tier II Hazardous Chemical Inventory

TIER II


THRESHOLD: Apply to product or hazardous ingredient?

- Warehouse Inventory: Fifty products that all contain acetone...

Report in a way that critical information is easily accessed.

Report the ingredient.

- When in doubt, ask your fire department which report option is best.


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THRESHOLD

- RETAIL GAS STATION
 - gasoline = 75,000 gallons
 - diesel fuel = 100,000 gallonsif all gasoline or diesel fuel is stored in compliant underground storage tanks

10,000 pound threshold applies to:

- E-85 and other Alternative fuels (except gasohol with ≤10% ethanol), Aviation Fuel, Heating Fuel, Kerosene, Propane


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THRESHOLD

Extremely Hazardous Substances (EHS) = the lower of:

- 500 pounds or
- Threshold Planning Quantity (TPQ)

EHSs and TPQs are listed

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Tier II Hazardous Chemical Inventory

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

Aggregate all occurrences of an EHS to determine if threshold is met. The program will do this for you.

Pure form + mixture components* = total EHS

* If $\geq 1\%$ of mixture, or $\geq 0.1\%$ if carcinogen

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EXTREMELY HAZARDOUS SUBSTANCES (EHS)

EXAMPLE 1

Sulfuric Acid

EHS = yes/no?

TPQ = **1000 lbs**

Tier II report threshold =
500 lbs



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TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

SULFURIC ACID IN INVENTORY

- 6 fork lifts with large lead-acid batteries
- 55 gal drum pure Sulfuric Acid

Total lbs Sulfuric Acid = ?

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Tier II Hazardous Chemical Inventory

SDS: SULFURIC ACID BATTERY GRADE

9. Physical and chemical properties

| | |
|----------------------------|--|
| Form : | liquid |
| M.F.: | H ₂ SO ₄ |
| M.W.: | 98.08 |
| Colour: | colourless |
| Odour: | odourless |
| pH value (20°C) | strongly acid |
| Viscosity (dynamic) | 26.9 mPa*s |
| Melting temperature | 3°C (98%) |
| Boiling temperature | 338°C (98%) |
| Vapour pressure | ~0.0001 mbar |
| Relative vapour density | not available |
| Density (20°C) | 1.84 g/cm ³ |
| Solubility in water (20°C) | soluble (caution! development of heat) |



TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

$$\begin{aligned} &55 \text{ gallons } \textbf{sulfuric acid} \\ &\quad \times \\ &\text{weight of water } \underline{\textbf{8.34 lbs/gal}} \\ &\quad \times \\ &\text{specific gravity (SG)} \underline{\textbf{1.84}} \\ &\quad = \\ &\underline{\textbf{844}} \text{ pounds of } \textbf{sulfuric acid} \end{aligned}$$

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SDSs FOR BATTERIES CAN BE MISLEADING



- Many SDSs for batteries list a percentage of “sulfuric acid” when they mean “battery acid”
- Battery Acid (Electrolyte) is a mixture of sulfuric acid and water

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Tier II Hazardous Chemical Inventory


TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

Lead-acid Batteries

Approximate Calculation based on total battery weight

- 2/3 battery weight = Lead
- 1/3 battery weight = battery acid
- 1/3 battery acid weight = Sulfuric Acid
- 1/9 (11%) battery weight = Sulfuric Acid




31 DEQ

TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

- 6 Batteries
- Each Battery Weighs 900 pounds
- How many pounds of Sulfuric Acid are in the batteries?



32 DEQ

TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

SULFURIC ACID IN BATTERIES

Total weight of batteries = **6 x 900 lbs = 5400 lbs**

Battery Acid = **1/3 x 5400 lbs = 1800 lbs**

Sulfuric Acid = **1/3 x 1800 lbs = 600 lbs**

= 1/9 (11%) x 5400 lbs = 600 lbs

33 DEQ

Tier II Hazardous Chemical Inventory

TIER II
EXTREMELY HAZARDOUS SUBSTANCES
(EHS)

TOTAL SULFURIC ACID

600 lbs in the batteries
+ **844** lbs pure
1444 lbs total

34 DEQ

TIER II
EXTREMELY HAZARDOUS SUBSTANCES
(EHS)

Required Reporting for
1444 lbs of Sulfuric Acid?

Tier II -
– Because \geq **500 lbs**


Emergency Planning
(Section 302)
– Because \geq **TPQ (1000 lbs)**

35 DEQ

TIER II
EXTREMELY HAZARDOUS SUBSTANCES
(EHS)

EXAMPLE 2

Nitric Acid
EHS = ~~yes~~/no?
TPQ = **1000 lbs**
Tier II report threshold = **500 lbs**



36 DEQ

Tier II Hazardous Chemical Inventory

TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)


1) 1000 gal of **7%** Nitric Acid (SG = 1.02)
Weight of mixture?

1000 gal x 8.34 lb/gal x 1.02 = 8506 lbs
Weight of the EHS component?

8506 lbs x 0.07 = 595 lbs nitric acid

Is a Tier II report required? Yes

Is this facility subject to Section 302? No

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TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)


2) 1000 gal of **65%** Nitric Acid (SG = 1.4)
Weight of mixture?

1000 gal x 8.34 lb/gal x 1.4 = 11,676 lbs
Weight of the EHS component?

11,676 lbs x 0.65 = 7,589 lbs nitric acid

Is a Tier II report required? Yes

Is this facility subject to Section 302? Yes

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TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)


EXAMPLE 3


Paraquat Dichloride

EHS = yes/no?

TPQ = 10 / 10,000 lbs non-reactive solid

Tier II report threshold = 10 / 500 lbs





Tier II Hazardous Chemical Inventory

TIER II

EXTREMELY HAZARDOUS SUBSTANCES (EHS)

10 gal of Gramoxone Extra Herbicide
(SG = 1.12) with 37% paraquat dichloride


Weight of mixture?
10 gal x 8.34 lb/gal x 1.12 = 93 lbs

Weight of the EHS component?
93 lbs x 0.37 = 34 lbs paraquat dichloride

Is a Tier II report required? Yes


Is this facility subject to Section 302? No

From pg 2-1: 34 lbs x 0.2 = 6.8 lbs

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REPORTING EHSs ONLINE

- Pure and mixture forms must be reported separately
- If mixture, you must report EHS mixture component with concentration
- You will be asked to specify the form of non-reactive solids

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TIER II

THRESHOLD



The threshold for reporting in response to requests is zero

Requests can be made by the SERC, LEPC, Fire Dept with jurisdiction over facility

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Tier II Hazardous Chemical Inventory

Tier II

RECAP...

- The owner or operator reports
- hazardous substances according to OSHA
- if exemptions do not apply,
- *and IF* the threshold amount is ever on site.

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Tier II

RECAP...

- OSHA Hazardous Substance threshold = 10,000 pounds
- Extremely Hazardous Substance threshold = 500 pounds or
TPQ (whichever is lower)
- Retail Gas Stations are special ...
- So are Requests ...

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SIMPLIFIED THOUGHT PROCESS...

1. Is it hazardous? (OSHA SDS)
 - No: not subject to reporting
 - Yes: go to question 2
2. Is it an EHS? (Appendix A)
 - No: threshold is 10,000 lbs
 - Yes: threshold is TPQ or 500 lbs

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Tier II Hazardous Chemical Inventory

Tier II

TEST YOUR UNDERSTANDING

What is the Tier II reporting threshold for...

- Hydrofluoric acid? **100 lbs**
- Ethanol? **10,000 lbs**
- Ammonium Nitrate? **10,000 lbs**
- Olive Oil? **Not Reportable**
- Chloroform? **500 lbs**
- Dry Ice (CO2)? **10,000 lbs**

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ONLINE REPORTING



Tier II Manager™

Off-the-shelf program customized for Michigan.

The program was rewritten on a new platform and includes new data elements.

All facility reports must be entered in this online program.

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ONLINE REPORTING

One website, your access depends on your permissions:

1. Submit – Reporters
2. Planning/Response – LEPCs & Fire Depts (Ann Arbor, Calhoun, Genesee, Ingham, Kent, Montcalm, Monroe, Oakland, Ottawa, Otsego, Saginaw, Washtenaw & Wayne Counties)
3. Administration – Mike & Benita

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Tier II Hazardous Chemical Inventory

ONLINE REPORTING

3 Types of Reports

1. Tier II Report Annual
2. Tier II Report Annual Revision
3. Tier II Report Update

Use the UPDATE to keep the data current! Add and remove chemicals in real time.

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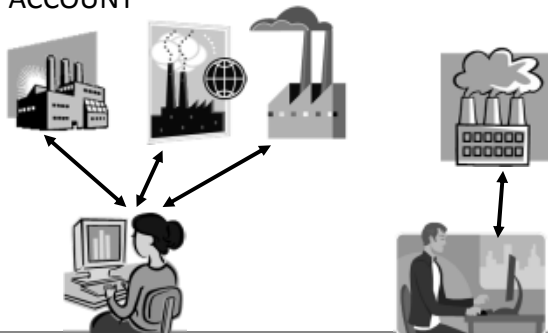


ONLINE REPORTS & DUE DATES (see Pg 1-10)



| Section 312 | Annual Hazardous Chemical Inventory | Tier II Report Annual & Revision | Annually by March 1 |
|-------------|--------------------------------------|-----------------------------------|---|
| Section 311 | Initial Hazardous Chemical Inventory | Tier II Report Update &/or Annual | Within 3 months after threshold reached |
| Section 302 | Emergency Planning Notification | Tier II Report Update &/or Annual | Within 60 days after threshold reached |

EACH REPORTER SHOULD HAVE ONLY ONE ACCOUNT



Tier II Hazardous Chemical Inventory

A FACILITY CAN BE ASSIGNED TO ONLY ONE ACCOUNT



CONSULTANTS

- Consultants must have their own account. Do not use a facility account.
- Owner or operator must give permission for their facility to be assigned to a consultant's account. Send email to the Administrator:
Deq-sara@michigan.gov

53 DEQ

ACCESS THE PROGRAM

Access Tier II Manager™
www.michigan.gov/sara



- SARA Title III Hazardous Chemical Inventory
- Click on the "big **brown** button"

54 DEQ

Tier II Hazardous Chemical Inventory

TIER II REPORT & ONLINE REPORTING

QUESTIONS?
MICHIGAN SARA TITLE III
PROGRAM
517-284-SARA (284-7272)
www.michigan.gov/sara
deq-sara@michigan.gov

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